W^2

WORLD of WATER

SUSTAINABLE WATER SUPPLIES in EAST-CENTRAL ILLINOIS

Mahomet Aquifer Consortium

WHY YOU SHOULD CARE

- YOU need a reliable supply of water.
- YOU share water sources with others.
- YOU can help protect the environment.
- YOUR actions can make a difference.

THREE PARTS

1. THE REGION

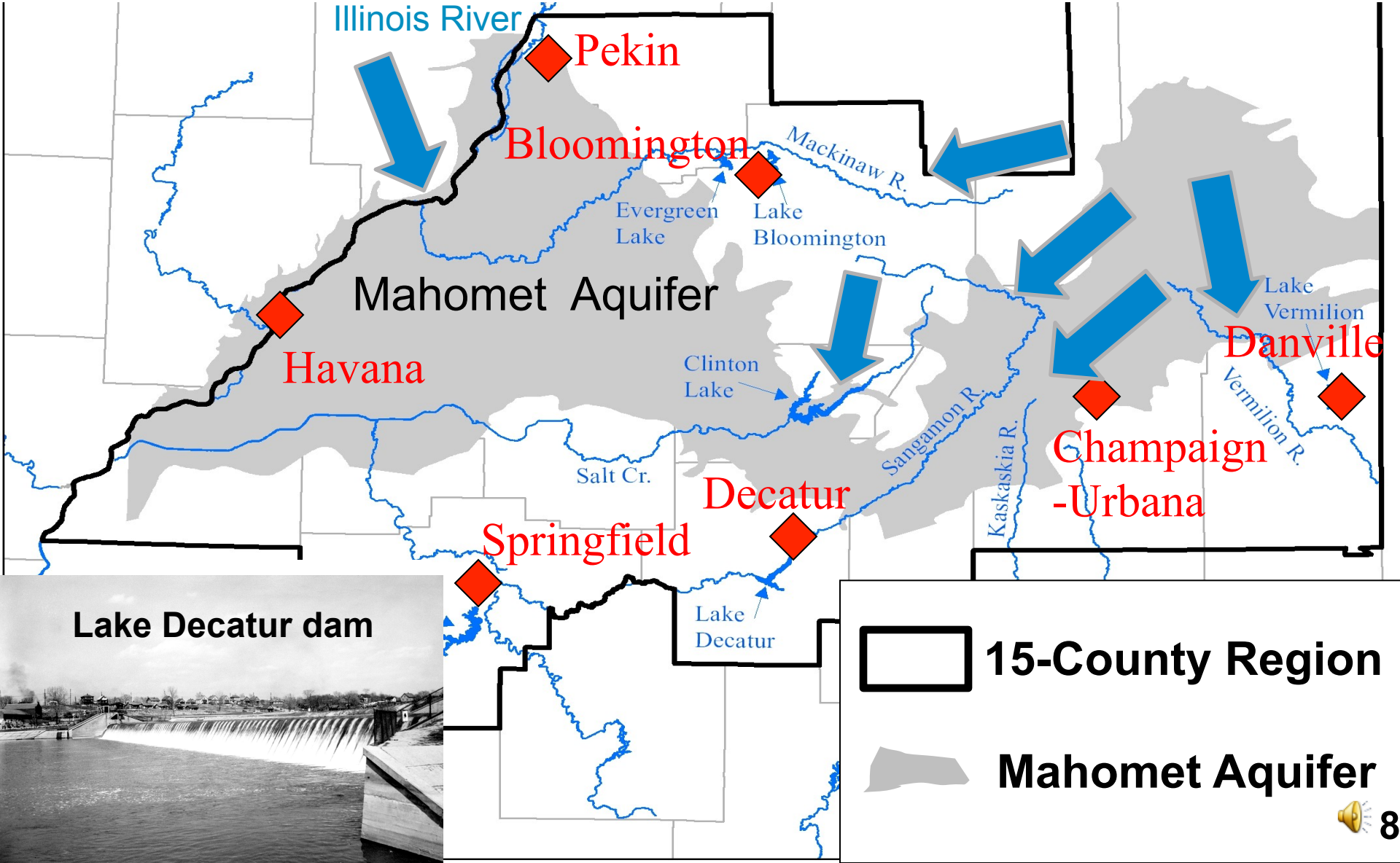
2. WATER USE

3. SUSTAINABLE WATER SUPPLIES

PART 1. THE REGION

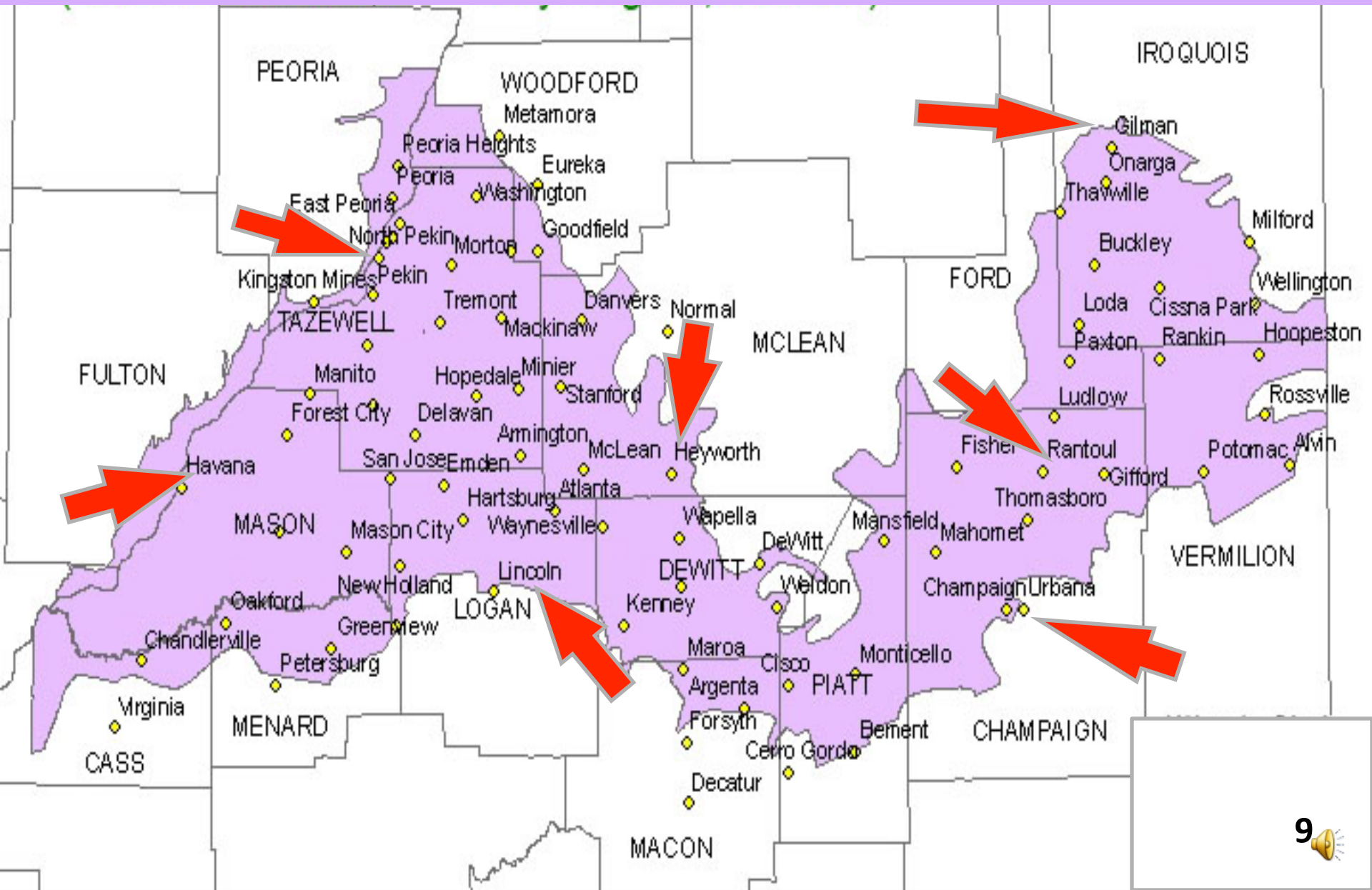
EAST-CENTRAL ILLINOIS WATER PLANNING AREA

SURFACE WATER and GROUNDWATER



Lake Decatur dam

Community Groundwater Supplies in the Mahomet Aquifer



WHERE DOES OUR WATER COME FROM?

land surface

Surface water (22%)

Shallow aquifers (10%)

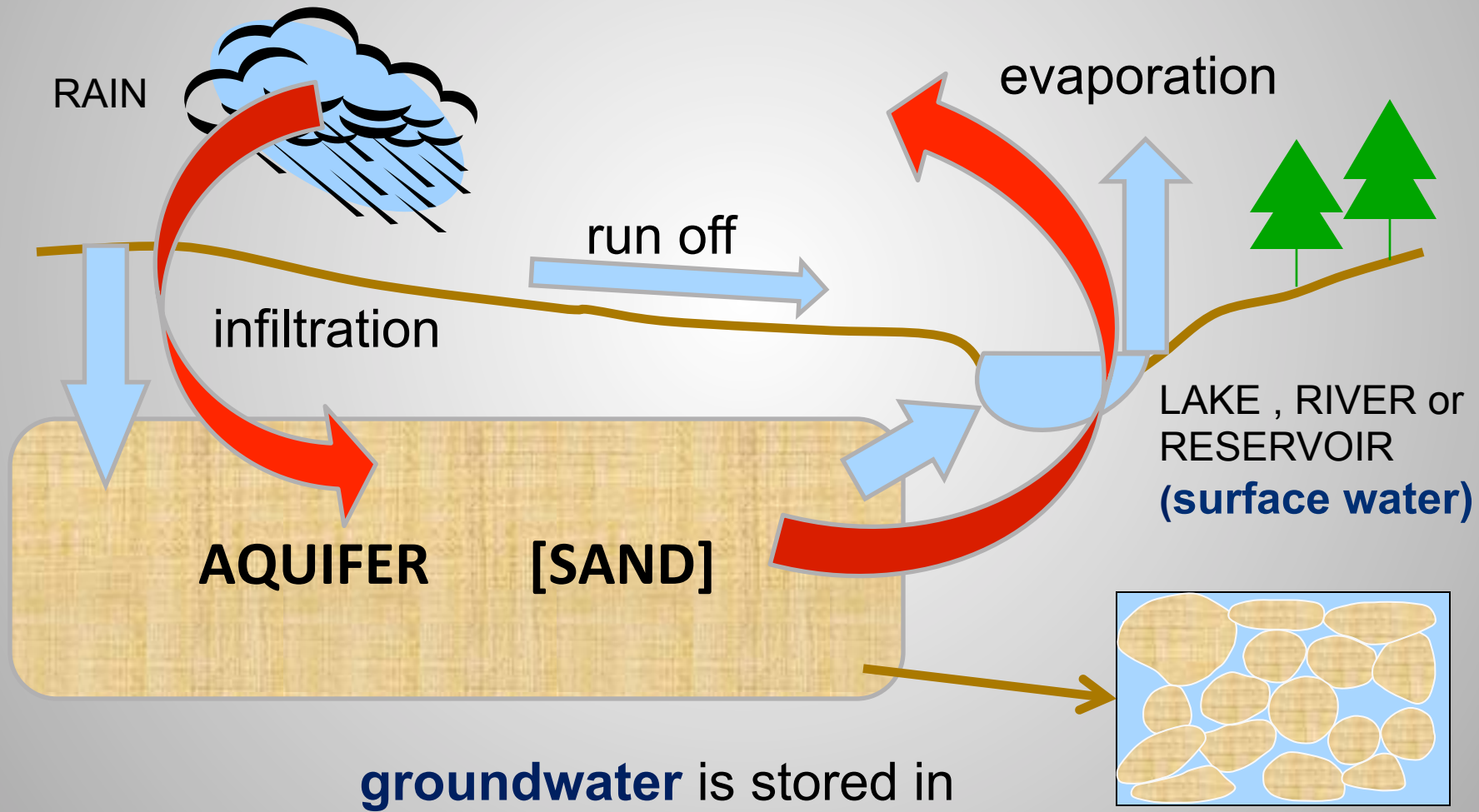
Mahomet Aquifer (68%)

350 feet

ILLINOIS WATER LAW

- Nobody has absolute ownership of water. We share water resources.
- You need a permit to construct a well, but not to withdraw water.
- Reasonable use – courts settle conflicts.
- No standards to prevent depletion of groundwater.

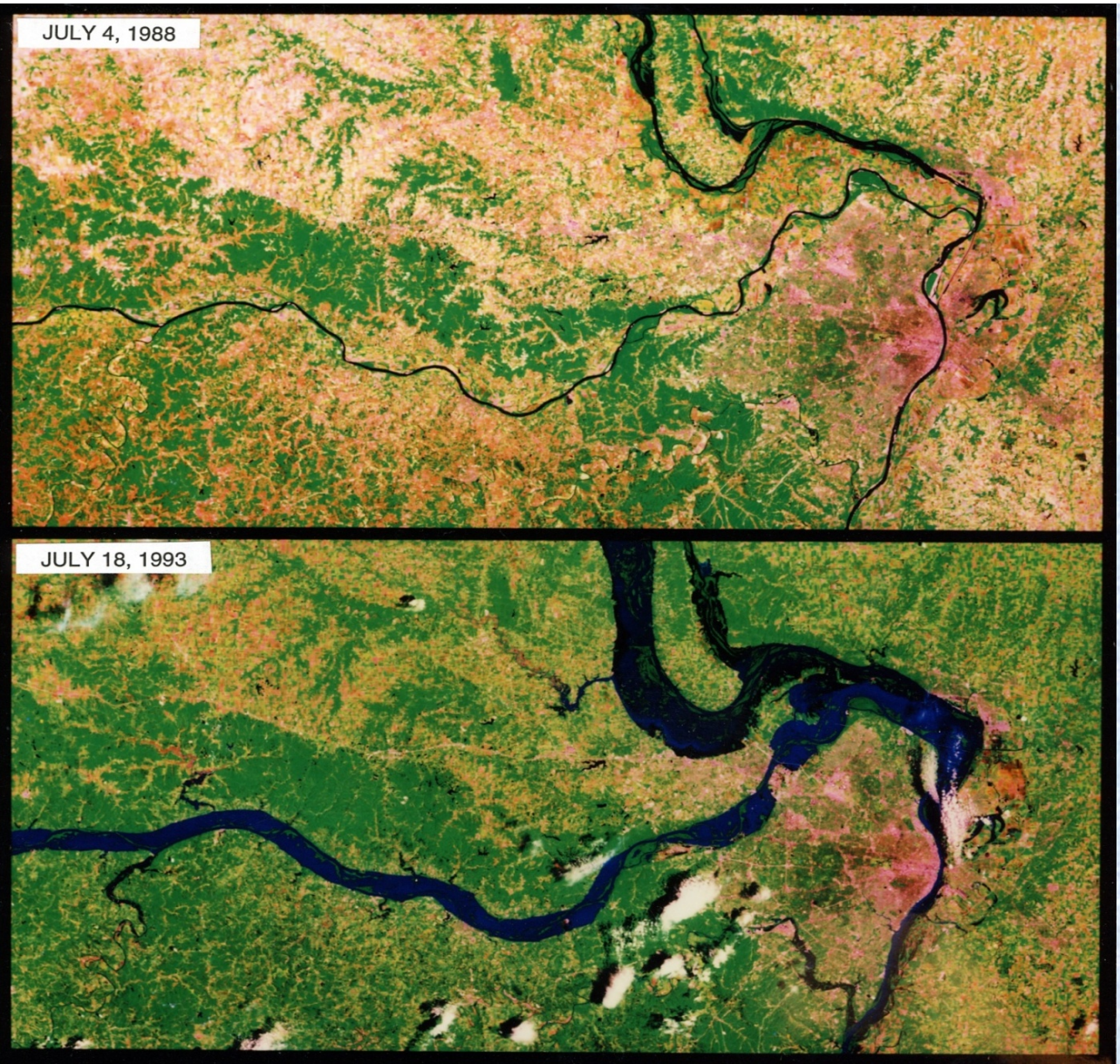
THE WATER CYCLE: climate, surface waters and groundwater are linked



groundwater is stored in spaces between sand particles

FLOODS AND DROUGHT

CLIMATE VARIABILITY AND CHANGE



SUMMER 1988
DROUGHT:
SPRINGFIELD
RAIN 4 in.

AVERAGE
SUMMER RAIN:
SPRINGFIELD
12 INCHES

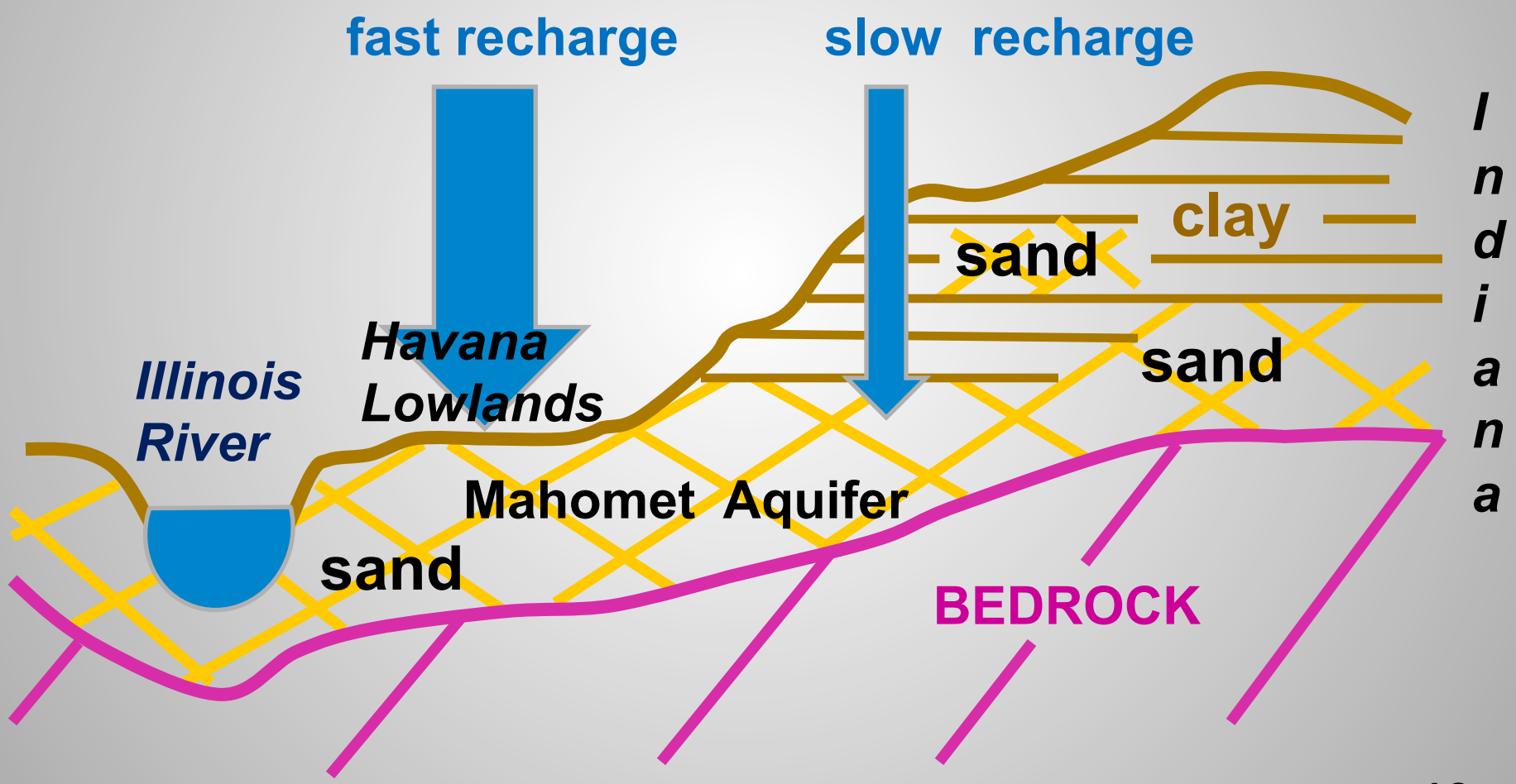
SUMMER 1993
FLOODS:
SPRINGFIELD
RAIN 20 in.

Lake Springfield 1988 Drought

GLACIERS FORM AQUIFERS

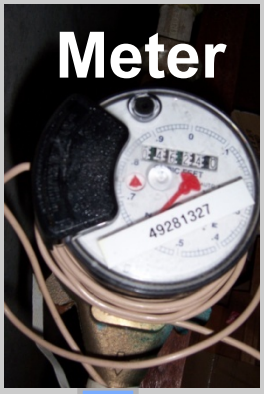
EFFECTS OF GLACIERS:

vertical slice through upper 300 feet of geology



PART 2. WATER USE

A WATER SUPPLY SYSTEM: TAPPING INTO NATURE



Reservoir
(surface water)

Aquifer
(groundwater)

HOW MUCH WATER DO WE USE?

- Total water use is expressed in millions of gallons per day (mgd)

- On average, East-Central Illinois uses:

  200 mgd for homes, factories, schools and offices;

  140 mgd for irrigation and agriculture

  1,315 mgd for electric power plants are mainly recycled

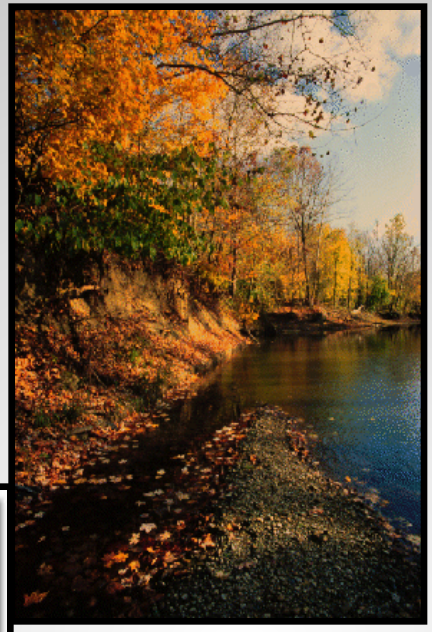
- Each person uses about 70 – 90 gallons per day at home

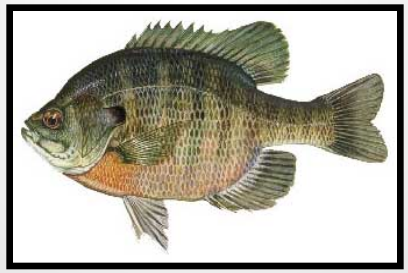
WATER USE AT HOME

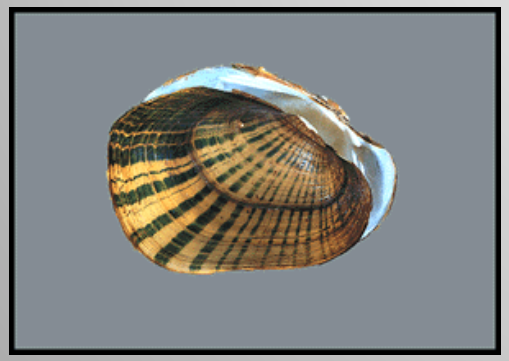
OUTDOOR WATER USE

CROP IRRIGATION

WATER FOR ELECTRIC POWER PRODUCTION, INDUSTRY AND COMMERCE







AQUATIC ECOSYSTEMS:

plants and animals need water in streams, rivers, lakes and wetlands

WATER USE BY COUNTY (mgd)
(excluding power generation)

COUNTY	2005	2050
Cass	13	20-24
Champaign	35	46-57
DeWitt	2	3
Ford	5	9-12
Iroquois	6	8-10
Logan	6	8-10
Macon	38	51-68
Mason	94	111-125

COUNTY	2005	2050
McLean	18	26-32
Menard	3	4
Piatt	3	4-5
Sangamon	30	38-47
Tazewell	71	112-149
Vermillion	13	18-20
Woodford	4	6
TOTAL	341	464-572

Water use increases about 20% during droughts

+36 to 68%

PART 3.

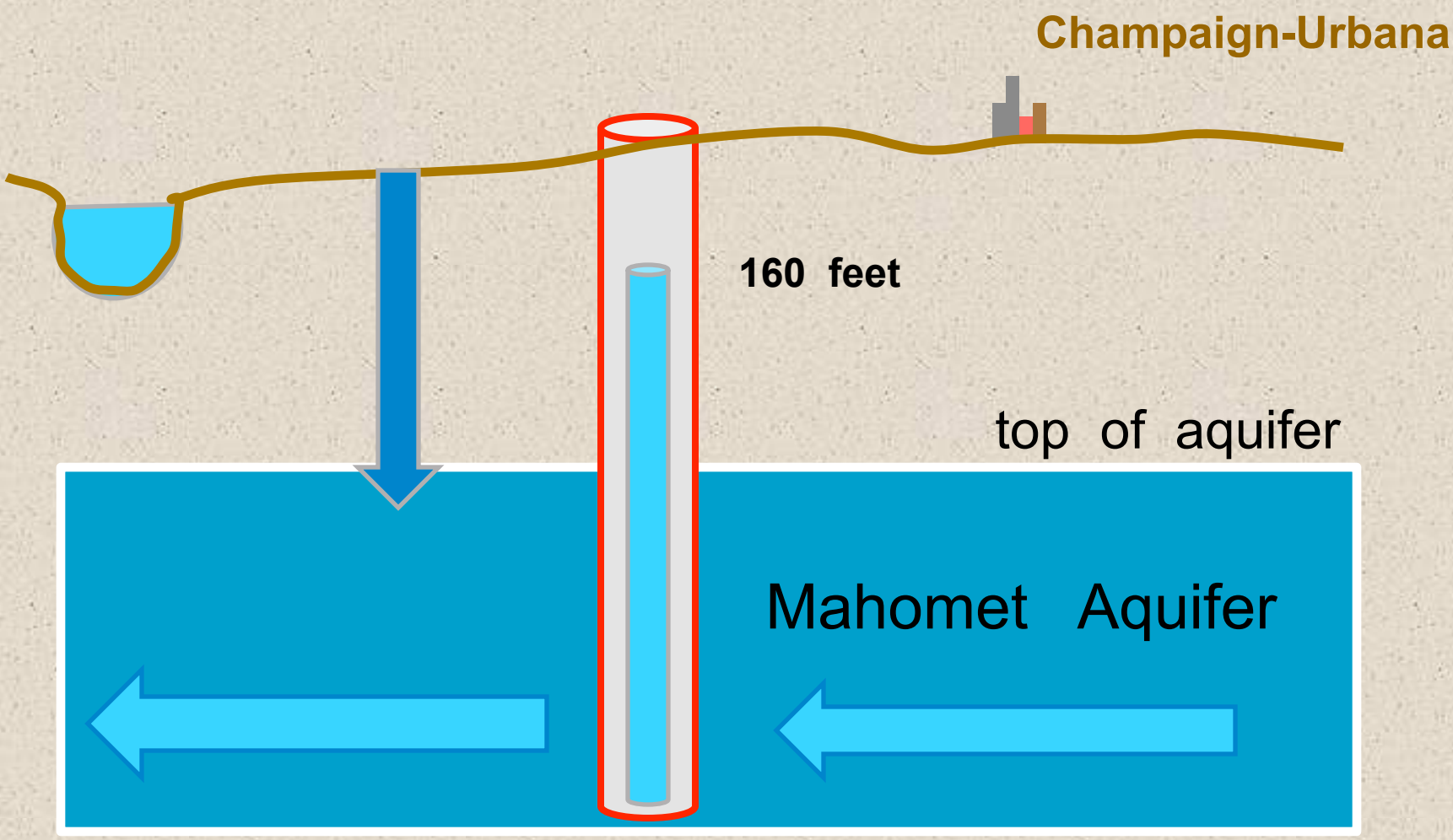
SUSTAINABLE WATER SUPPLIES

SUSTAINABLE WATER SUPPLIES

FUTURE GENERATIONS

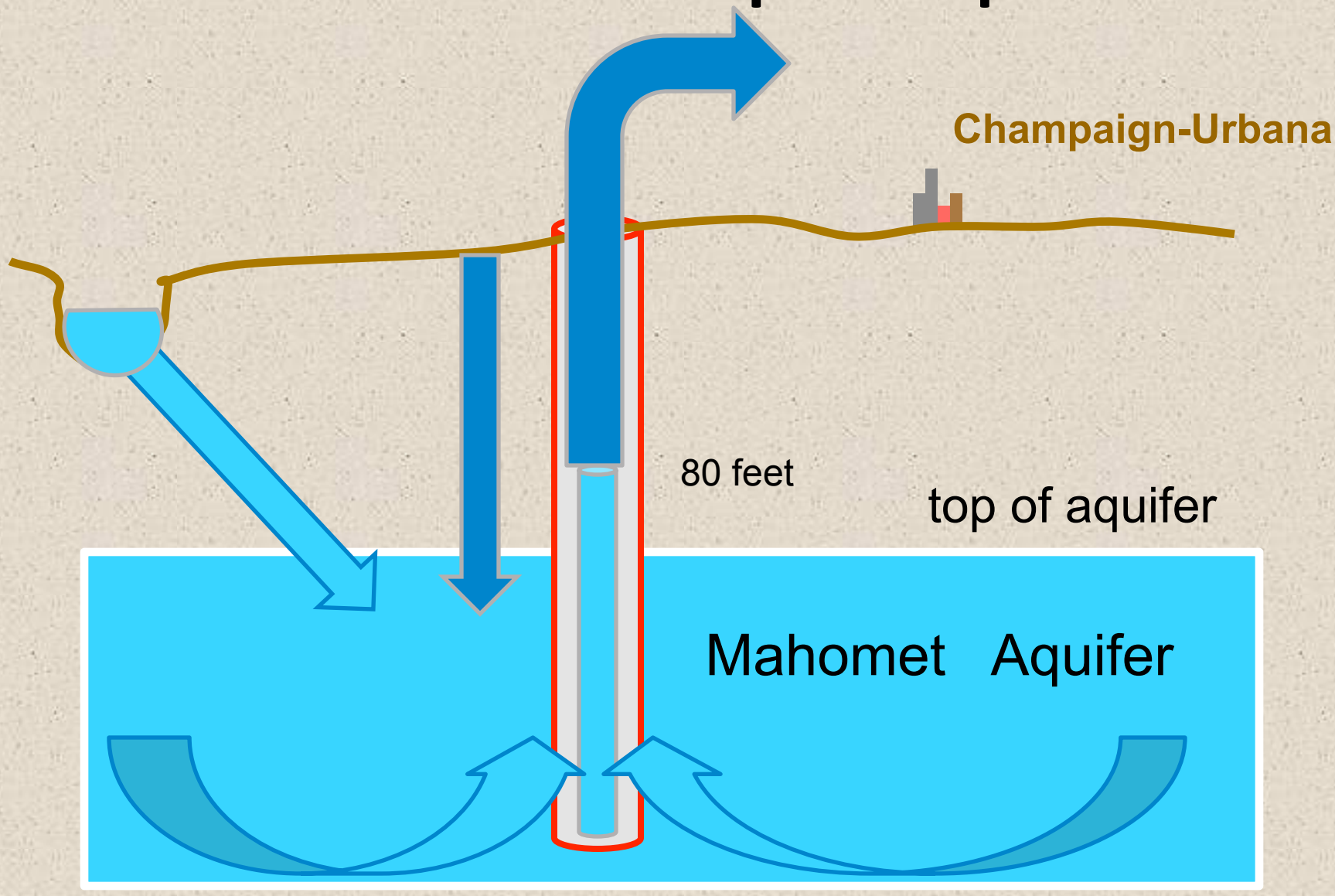
WATER LEVEL BEFORE PUMPING

160 feet above top of aquifer

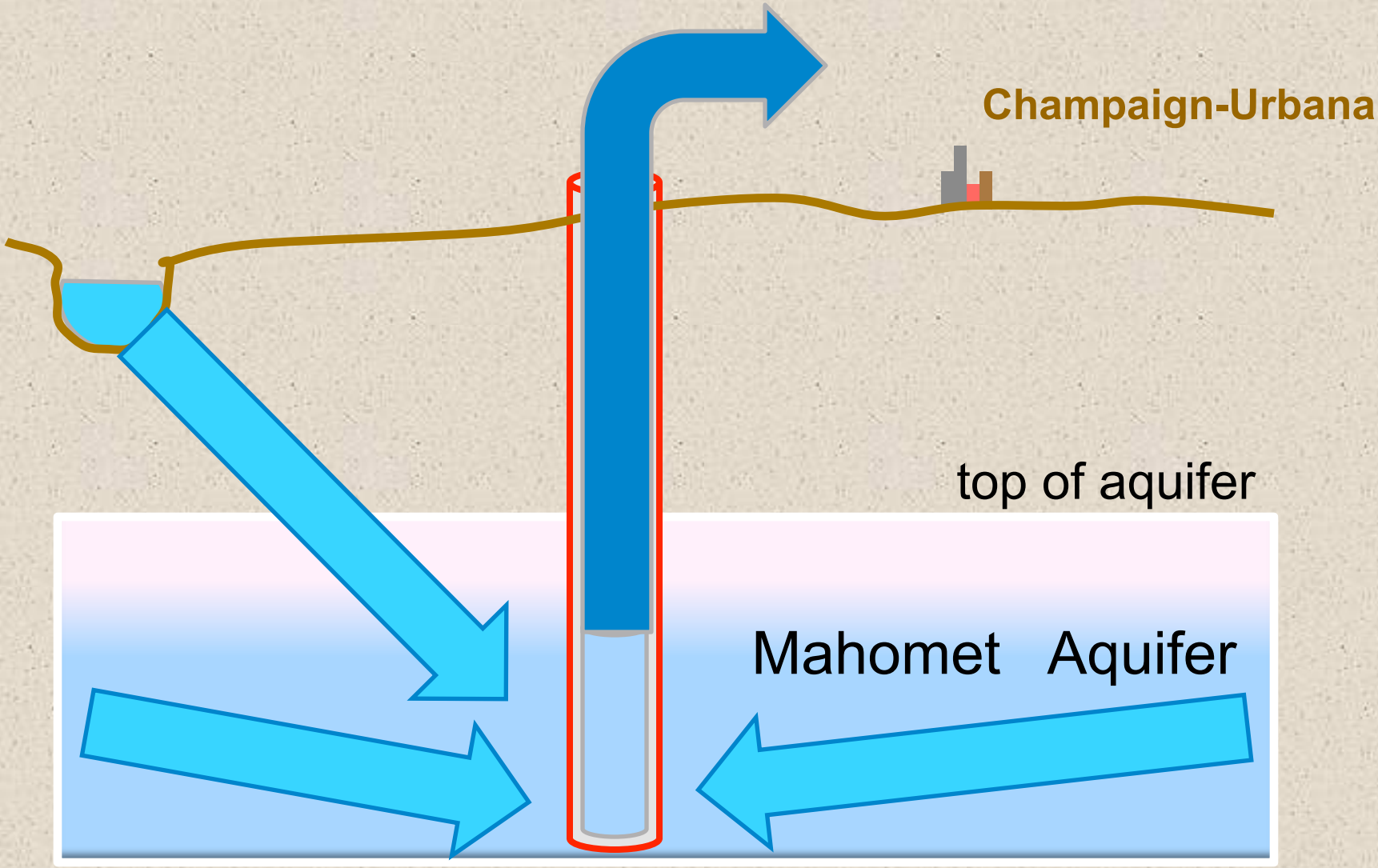


WATER LEVEL IN 2005

80 feet above top of aquifer



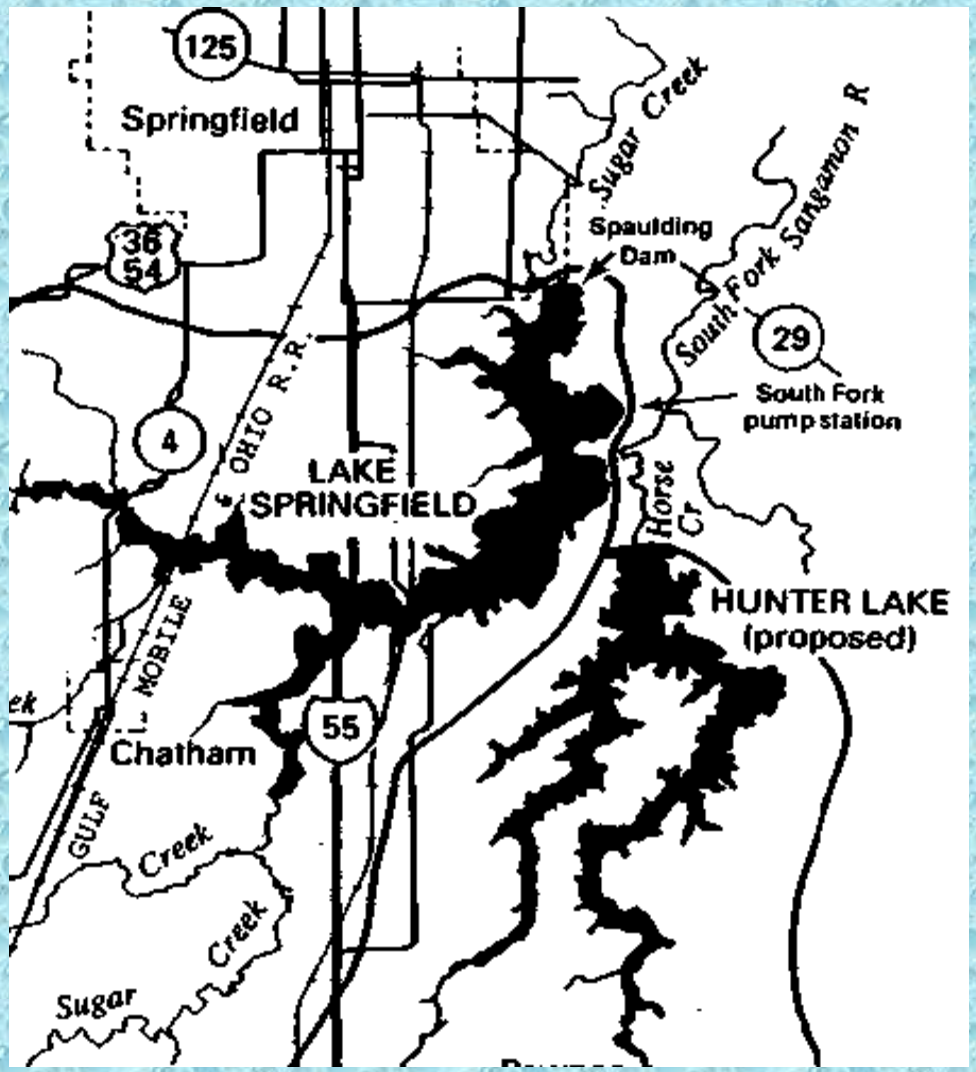
DON'T ALLOW WATER LEVEL TO DROP BELOW TOP OF AQUIFER



STEPS TO SUSTAINABILITY

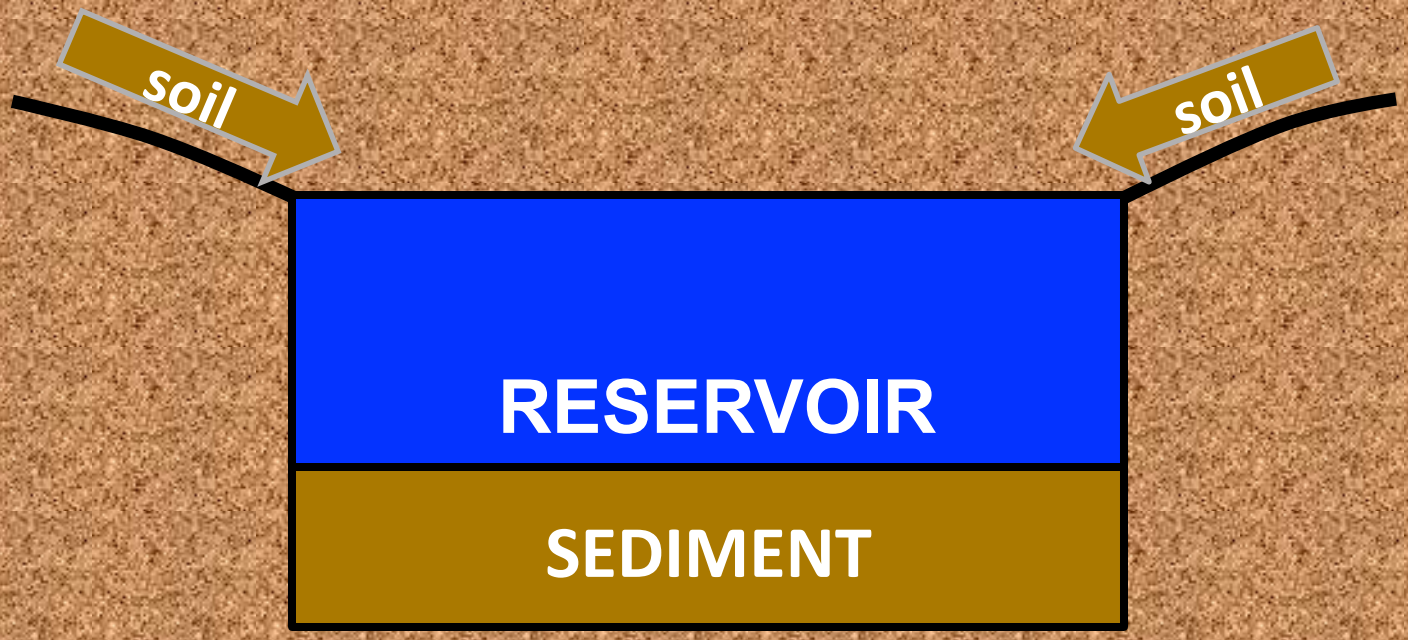
- Install monitoring wells.
- Maintain water level in wells above top of aquifer and protect aquatic ecosystems.
- Space future wells further apart.

RESERVOIRS


125
Springfield
36
54
4
OHIO R.R.
LAKE
SPRINGFIELD
Sugar Creek
Spaulding
Dam
South Fork Sangamon R
29
South Fork
pump station
Horse Cr
HUNTER LAKE
(proposed)
MOBILE
Chatham
55
GULF
Creek
Creek
Sugar

Lake Decatur

SEDIMENTATION RESULTS IN REDUCED WATER STORAGE CAPACITY IN RESERVOIRS



WEIGHING BENEFITS AND COSTS

BENEFITS:

- *Reliable supplies*
- *Adequate supplies*
- *Clean water*

COSTS:

- *$$$$ (Financial)*
- *Environmental*

SUSTAINABLE WATER SUPPLIES

To Do:

- BE INFORMED
- PARTICIPATE IN PLANNING A SUSTAINABLE FUTURE
- ONLY USE WATER THAT YOU NEED

USE WATER EFFICIENTLY AT HOME

THANK YOU!

Mahomet Aquifer Consortium
Regional Water Supply Planning Committee
Illinois State Water Survey
Illinois State Geological Survey
Illinois Natural History Survey
United States Geological Survey
Illinois Department of Natural Resources
Illinois American Water

http://www.rwspc.org/
http://www.mahometaquiferconsortium.org/
http://isws.illinois.edu/